

ON THE MINERAL COMPOSITION AND STRUCTURE OF THE TROUP METEORITE.

By GEORGE P. MERRILL.

Head Curator of Geology, United States National Museum.

The general megascopic character of this stone has been sufficiently described in Prof. J. A. Udden's paper.¹ The chondritic structure is quite indistinct and might at first seem doubtful but for the occasional presence of larger forms (2 to 3 mm. in diameter) of a white and gray color. The texture is firm and the chondrules break with the matrix. The amount of metal (3.1 per cent) given in Doctor Schoch's analysis (p. 475) is much smaller than one would be led to suppose from the appearance of a polished surface (see pl. 101 of Professor Udden's paper), and the writer ventures to suggest that the small amount of material ("some 2 or 3 grams") utilized did not correctly represent the character of the stone as a whole. This has in the past been an altogether too frequent cause of error by those who have regarded meteorites as too precious for exhaustive study.

In thin sections under the microscope the stone presents an extremely variable, granular, and indistinctly chondritic structure, such as is characteristic of many of the intermediate chondrites, to which group this stone is assigned. So extremely variable is it as to almost baffle description (pl. 102). Areas of closely interlocking olivines and enstatites in crystalline granules of considerable size give way abruptly to those showing large irregular outlined fragmental material surrounded by narrow zones so finely granular as to give only aggregate polarization, and these again to imperfect chondroidal forms, sometimes porphyritic and sometimes of barred or radiate structure. Throughout the entire mass and within the chondrules themselves abundant irregular clear and transparent, almost completely isotropic areas of glass (maskelynite), with interstitial areas of colorless calcium phosphate (merrillite) are by no means rare. Indeed, so abundant are the last named that it

¹ Proc. U. S. Nat. Mus., vol. 59, 1921, pp. 471-476.

would seem their presence should have been made known by the analysis (p. 475).² This, together with an even greater abundance of the isotropic maskelynite, constitutes the most interesting feature of the stone. The pyroxenic constituent is almost completely colorless in the section and is evidently a normal enstatite. The metal, sulphide, and other opaque constituents require no special mention.

² Doctor Schoch's attention having been called to this discrepancy, he has, since the above was in type, made further investigations and reported 0.51 P₂O₅. See p. 475 of Udden's paper.